

## REMARKS

Claims 1-24 were pending in the above-identified application when last examined and are amended as indicated above.

Claims 1-24 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicant respectfully traverses the rejection.

Independent claim 1 as amended above recites, "A method comprising: ... selecting 2N operators ..., wherein selecting the 2N operators includes each of n players selecting one or more of the 2N operators ..., the operators being selected by the player according to a choice of the player regarding a cooperative effort; applying each of the 2N ...; and evaluating a final state vector that results from the application of the 2N operators to thereby assign respective results to the players, the results designating whether respective players will cooperate in or defect from the cooperative effort." The process of claim 1 is not directed to merely abstract ideas or a mathematical algorithm because claim 1 requires players to make selections. Further, the process of claim 1 provides the useful, concrete, and tangible results of designating whether players will cooperate with or defect from a cooperative effort. Applicants' specification, for example, in paragraphs [0002], [0003], and [0016] further illustrates the usefulness of such processes. In accordance with the holding in *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, claim 1 is directed to statutory subject matter under 35 U.S.C § 101 at least because claim 1 recites a process that produces a useful, concrete, and tangible result.

Claims 2-9 depend from claim 1 and are directed to statutory subject matter for at least the same reasons that claim 1 is directed to statutory subject matter.

Claim 6 provides further statutory subject matter by reciting, "software executed in a classical computer performs the step of applying the operators to the state vector." Accordingly, claim 6 is clearly not simply directed to abstract ideas, but instead recites physical implementation of a process in a computer.

Claim 7 provides further statutory subject matter by reciting, "constructing the state vector comprises setting a system in a quantum state corresponding to the state vector." Claim 7 thus recites manipulation of physical systems and not just abstract ideas.

Claims 8 and 9 similarly provide additional statutory subject matter by reciting physical implementations of process steps.

Independent claim 10 is statutory subject matter because it recites a new and useful machine. In particular, claim 10 recites, "A system comprising: a source of multiple channels of entangled photon pairs; a plurality of stations ...; a first optical network ...;

and a measurement system coupled to measure the states of the photons after delivery to the stations.” The system is useful because it can be used, for example, for implementation of a quantum public goods game that allocates players’ contributions to provide a public good. Further, the structure recited in claim 10 is very concrete, so that the case law and holdings regarding the manipulation of abstract ideas do not suggest that claim 10 is directed non-statutory subject matter.

Accordingly, independent claim 10 and claims 11-24, which depend from claim 10, are clearly directed to statutory subject matter.

For the above reasons, Applicants request reconsideration and withdrawal of the rejection under 35 U.S.C. § 101.

Claims 1-24 were rejected under 35 U.S.C. § 112, first paragraph, for lacking sufficient disclosure in the specification of how to practice the invention. In particular, the Office Action indicated, “If the application fails as a matter of fact to satisfy 35 U.S.C. § 101, then the application also fails as a matter of law to enable one of skill in the art to use the invention under 35 U.S.C. § 112.” For the reasons indicated above, claims 1-24 satisfy 35 U.S.C. § 101. Since no other lacking of the specification or claims was asserted in the rejection under 35 U.S.C. § 112, first paragraph, Applicants request reconsideration and withdrawal of this rejection.

In summary, claims 1-24 were pending in the application. This response amends claim 1 and leaves claims 2-24 in the form previously examined. For the above reasons, Applicants respectfully request allowance of the application including claims 1-24.

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Respectfully submitted,



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